

Appl. No. 09/889,632
Atty. Docket No. 7399
Amtd. dated October 31, 2003
Reply to Office Action of July 31, 2003
Customer No. 27752

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-29- canceled

30. (canceled)

31. (canceled)

32. (canceled)

33. (canceled)

34. (presently amended) A composition according to Claim [30] 50 wherein said surfactant system further comprising an comprises one or more noncrystallinity-disrupted alkylarylsulfonate surfactant having the formula:



wherein L is a C₅-C₂₀ linear hydrocarbyl unit; D is -SO₃⁻, M is a cation, q is the cation valence, a and b are numbers having values which provide said surfactant with charge neutrality; Ar is selected from benzene, toluene, and mixtures thereof.

35. (canceled)

36. (presently amended) A composition according to Claim [30] 50 wherein said surfactant system further comprising comprises a surfactant selected from the group consisting of alkylene carbonates, monoalkyl succinamates, alkylpolysaccharides, ethoxylated glycerol type compounds, and mixtures thereof.

37. (presently amended) A composition according to Claim [30] 50 wherein said alkylarylsulfonate surfactant admixture has a Sodium Critical Solubility Temperature of 20°C or less.

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38. (canceled)

39. (presently amended) A composition according to Claim [30] 50 wherein said conventional hand dishwashing adjunct adjunct ingredient is selected from the group consisting of builders, detergents, enzymes, at least partially water-soluble or water dispersible polymers, abrasives, bactericides, tarnish inhibitors, dyes, solvents, hydrotropes, perfumes, thickeners, antioxidants, processing aids, suds boosters, suds suppressors, suds stabilizers, diamines, carriers, enzyme stabilizers, polysaccharides, buffers, anti-fungal agents, mildew control agents, insect repellents, anti-corrosive aids, chelants and mixtures thereof.

40. (presently amended) A composition according to Claim [30] 50 wherein the surfactant system comprises further comprising from 0.5% to 25% by weight of the surfactant system, of a polyalkyleneoxy nonionic surfactant, said polyalkyleneoxy nonionic surfactant comprising:

- i) a hydrophobic group selected from C₁₀-C₁₆ linear alkyl, C₁₀-C₁₈ alkyl having 1-3 carbon atom branching, C₁₀-C₁₆ Guerbet alkyl, and mixtures thereof; and
- ii) a hydrophilic group comprising from 1 to 15 C₂-C₄ alkyleneoxy units, said alkyleneoxy units said units capped with a sulfate moiety.

41. (presently amended) A composition according to Claim [30] 50 wherein the surfactant system comprises further comprising from 0.5% to 25% by weight of the surfactant system, of a C₁₀-C₁₆ linear alkyl sulfate, C₁₀-C₁₈ alkyl sulfate having 1-3 carbon atom branching, C₁₀-C₁₆ Guerbet alkyl sulfate surfactant, and mixtures thereof.

42. (presently amended) A composition according to Claim [30] 50 wherein the surfactant system comprises further comprising from 0.5% to 25% by weight of the surfactant system, of an alkyl alkyleneoxy sulfate surfactant, said surfactant comprising:

- i) a hydrophobic group selected from C₁₀-C₁₆ linear alkyl, C₁₀-C₁₈ alkyl having 1-3 carbon atom branching, C₁₀-C₁₆ Guerbet alkyl, and mixture thereof; and
- ii) a hydrophilic group comprising from 1 to 15 C₂-C₄ alkyleneoxy units, said alkyleneoxy units said units capped with a sulfate moiety.

43. (canceled)

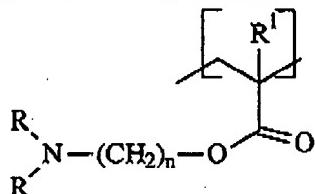
44. (presently amended) A composition according to Claim [43] 50 wherein said diamine is selected from the group consisting of dimethyl amino propylenediamine, 1,6-hexane diamine, 1,3 propane diamine, 2-methyl-1,5pentanediamine, 2,3-pentanediamine, 1,3-diaminobutane, 1,2-

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bis(2-aminoethoxy)ethane, isophoronediamine, 1,3-bis(methylamine)cyclohexane, and mixtures thereof.

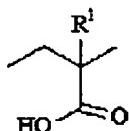
45. (presently amended) A composition according to Claim [30] 50 wherein said conventional hand dishwashing adjunct comprises further comprising a polymeric or copolymeric suds stabilizer, said stabilizer having a molecular weight of from 1,000 to 2,000,000 daltons and comprising units selected from the group consisting of:

i) N, N-(dialkylamido) alkyl esters having the formula:



wherein each R is independently selected from Hydrogen hydrogen, C₁-C₆ alkyl, and mixtures thereof; R¹ is hydrogen, C₁-C₆ alkyl, and mixtures thereof; n is from 2 to 6;

ii) acids having the formula:



wherein R¹ is hydrogen, C₁-C₆ alkyl, and mixtures thereof;

iii) and mixtures thereof provided that the ratio of (ii) to (i) is from 2 to 1 to 1 to 2.

46. (canceled)

46. (presently amended) A composition according to Claim [45] 50 wherein said surfactant system further comprising comprises from 0.5% to 25% by weight of said surfactant system, of an alkyl alkyleneoxy sulfate surfactant, said surfactant comprising:

i) a hydrophobic group selected from C₁₀-C₁₆ linear alkyl, C₁₀-C₁₈ alkyl having 1-3 carbon atom branching, C₁₀-C₁₆ Guerbet alkyl, and mixtures thereof; and

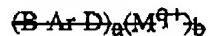
ii) a hydrophilic group comprising from 1 to 15 C₂-C₄ alkyleneoxy units, said alkyleneoxy units said units capped with a sulfate moiety.

47. (canceled)

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48. (presently amended) A method for washing tableware comprising the step of contacting tableware with an aqueous solution containing a hand dishwashing composition according to Claim 50, comprising:

- ~~A) from 0.1% to 99.9% by weight, of a surfactant system comprising:~~
- ~~i) from 10% to 100% by weight, of an admixture of two or more alkylarylsulfonate surfactants of formula:~~



wherein D is $-SO_3^-$, M is a cation, q is the cation valence, a and b are indices numbers having values which provide said surfactant with charge neutrality; Ar is a C₆ aromatic ring; B is a C₅-C₂₀ disrupted hydrocarbyl moiety;

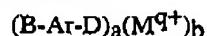
~~said surfactant admixture has a Sodium Critical Solubility Temperature of 40°C or less; and at least one of the following:~~

- ~~a) modified SCAS test biodegradation which exceeds the value obtained for tetrapropylene benzene sulfonate; or~~
- ~~b) a ratio of at least 5:1 by weight, of non-quaternary carbon atoms to quaternary carbon atoms which comprise B;~~
- ~~ii) optionally one or more detergentsurfactants;~~
- ~~B) from 0.00001% to 99.9% by weight, of an adjunct ingredient; and~~
- ~~C) from 0.01% to 7% by weight, of a divalent ion selected from the group consisting of magnesium, calcium and mixtures thereof.~~

49. (canceled)

50. (new) A hand dishwashing composition comprising:

- ~~A) from 0.1% to 99.9% by weight, of a surfactant system comprising:~~
- ~~i) from 10% to 80% by weight of said surfactant system, of two or more alkylarylsulfonate surfactants of formula:~~



wherein D is $-SO_3^-$, M is a cation, q is the cation valence, a and b are numbers having values which provide said surfactant with charge neutrality; Ar is selected from benzene, toluene, and mixtures thereof; B comprises a C₅-C₂₀ hydrocarbyl moiety and a crystallinity-disrupted moiety; said crystallinity-disrupted moiety interrupts or branches from said hydrocarbyl moiety and is selected from the group consisting of:

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I) one or more branches selected from C₁-C₃ alkyl, C₁-C₃ alkoxy, hydroxy, and mixtures thereof;

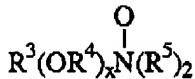
II) one or more interrupts selected from the group consisting of -O-, -OSi(CH₃)₂O-, -SO₂-, and mixtures thereof;

wherein said surfactant system has a Sodium Critical Solubility Temperature of 40°C or less; and at least one of the following:

a) modified SCAS test biodegradation which exceeds the value obtained for tetrapropylene benzene sulfonate; or

b) a ratio of at least 5:1 by weight, of non-quaternary carbon atoms to quaternary carbon atoms which comprise B;

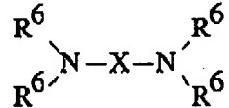
ii) from 0.1% to 20% by weight, of an amine oxide selected from the formula



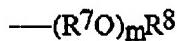
wherein R³ is an alkyl, hydroxyalkyl, or alkyl phenyl group or mixtures thereof containing from about 8 to about 22 carbon atoms; R⁴ is an alkylene or hydroxyalkylene group containing from about 2 to about 3 carbon atoms or mixtures thereof; x is from 0 to about 3; and each R⁵ is an alkyl or hydroxyalkyl group containing from about 1 to about 3 carbon atoms or a polyethylene oxide group containing from about 1 to about 3 ethylene oxide groups wherein the amine oxide comprises from 0 to 40 ppm hydrogen peroxide and from 0 to 40 ppm amine impurities;

iii) optionally one or more detergents other than (i) and (ii) wherein the one or more detergents comprises 0 to 40 ppm hydrogen peroxide;

B) a diamine substantially free of impurities having a pK_a of at least 8, said diamine having the formula:

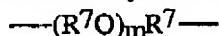


wherein each R⁶ is independently selected from the group consisting of hydrogen, C₁-C₄ alkyl, alkyleneoxy having the formula:



wherein R⁷ is C₂-C₄ linear or branched alkylene, and mixtures thereof; R⁸ is hydrogen, [C-C₄] C₁-C₄ alkyl and mixtures thereof; m is from 1 to 10; X is a unit selected from:

i) C₃-C₁₀ linear, cyclic, or branched alkylene, alkyleneoxyalkylene having the formula:



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wherein R⁷ and m are the same as defined herein;

ii) a C₃-C₁₀ linear, cyclic, or branched alkylene, C₆-C₁₀ arylene; wherein said unit comprises one or more electron donating or electron withdrawing moieties which provide said diamine with a pK_a greater than 8;

iii) and mixtures thereof;

C) From 0.0001% to 2% by weight, of an enzyme selected from proteases, amylases, lipases, and mixtures thereof;

D) 0.001% to about 5% by weight, of a non-diamine stabilizers selected from antioxidants, chelants, and mixtures thereof;

E) from 0.00001% to 99.9% by weight, of a conventional hand dishwashing adjunct; and

F) from 0.01% to 7% by weight, of a divalent ion selected from the group consisting of magnesium, calcium and mixtures thereof.

51. (new) A composition according to Claim 50 wherein said crystallinity-disrupted alkylarylsulfonate surfactants include two or more homologs.

52. (new) A composition according to Claim 50 wherein said crystallinity-disrupted alkylaryl sulfonate surfactant include two or more isomers selected from the group consisting of:

i) ortho-, meta- and para- isomers based on positions of attachment of B and D to Ar, when Ar is a substituted or unsubstituted benzene;

ii) positional isomers based on positions of attachment of said crystallinity-disrupting moieties to said hydrocarbyl moiety; and

iii) stereoisomers based on chiral carbon atoms in B;

iv) positional isomers based on position of attachment of Ar to B at the first, second or third carbon atom in said hydrocarbyl moiety.

53. (new) A composition according to Claim 52 wherein said crystallinity-disrupted alkylaryl sulfonate surfactant includes at least about 60% by weight of said surfactant system of positional isomers based on position of attachment of Ar to B at the first, second, or third carbon atoms in said hydrocarbyl moiety.

54. (new) A method of reducing malodor in a hand dishwashing composition comprising:

A) from 0.1% to 99.9% by weight, of a surfactant system comprising:

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i) from 10% to 80% by weight of said surfactant system, of of two or more alkylarylsulfonate surfactants of formula:



wherein D is $-SO_3^-$, M is a cation, q is the cation valence, a and b are numbers having values which provide said surfactant with charge neutrality; Ar is selected from benzene, toluene, and mixtures thereof; B comprises a C_5-C_{20} hydrocarbyl moiety and a crystallinity-disrupted moiety; said crystallinity-disrupted moiety interrupts or branches from said hydrocarbyl moiety and is selected from the group consisting of:

I) one or more branches selected from C_1-C_3 alkyl, C_1-C_3 alkoxy, hydroxy, and mixtures thereof;

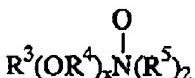
II) one or more interrupts selected from the group consisting of $-O-$, $-OSi(CH_3)_2O-$, $-SO_2-$, and mixtures thereof;

wherein said surfactant system has a Sodium Critical Solubility Temperature of 40°C or less; and at least one of the following:

a) modified SCAS test biodegradation which exceeds the value obtained for tetrapropylene benzene sulfonate; or

b) a ratio of at least 5:1 by weight, of non-quaternary carbon atoms to quaternary carbon atoms which comprise B;

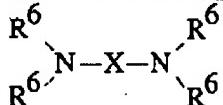
ii) from 0.1% to 20% by weight, of an amine oxide selected from the formula



wherein R^3 is an alkyl, hydroxyalkyl, or alkyl phenyl group or mixtures thereof containing from about 8 to about 22 carbon atoms; R^4 is an alkylene or hydroxyalkylene group containing from about 2 to about 3 carbon atoms or mixtures thereof; x is from 0 to about 3; and each R^5 is an alkyl or hydroxyalkyl group containing from about 1 to about 3 carbon atoms or a polyethylene oxide group containing from about 1 to about 3 ethylene oxide groups;

iii) optionally one or more detergents other than (i) and (ii) wherein the one or more detergents comprises 0 to 40 ppm hydrogen peroxide;

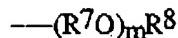
B) a diamine having a pK_a of at least 8, said diamine having the formula:



wherein each R^6 is independently selected from the group consisting of hydrog n, C_1-C_4

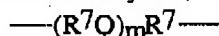
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alkyl, alkyleneoxy having the formula:



wherein R^7 is $\text{C}_2\text{-C}_4$ linear or branched alkylene, and mixtures thereof; R^8 is hydrogen, $[\text{C-C}_4]\text{C}_1\text{-C}_4$ alkyl and mixtures thereof; m is from 1 to 10; X is a unit selected from:

- i) $\text{C}_3\text{-C}_{10}$ linear, cyclic, or branched alkylene, alkyleneoxyalkylene having the formula:



wherein R^7 and m are the same as defined herein;

ii) a $\text{C}_3\text{-C}_{10}$ linear, cyclic, or branched alkylene, $\text{C}_6\text{-C}_{10}$ arylene; wherein said unit comprises one or more electron donating or electron withdrawing moieties which provide said diamine with a pK_a greater than 8;

iii) and mixtures thereof;

C) From 0.0001% to 2% by weight, of an enzyme selected from proteases, amylases, lipases, and mixtures thereof;

D) 0.001% to about 5% by weight, of a non-diamine stabilizers selected from antioxidants, chelants, and mixtures thereof;

E) from 0.00001% to 99.9% by weight, of a conventional hand dishwashing adjunct; and F) from 0.01% to 7% by weight, of a divalent ion selected from the group consisting of magnesium, calcium and mixtures thereof

wherein the diamine substantially free of impurities and the amine oxide comprises from 0 to 40 ppm hydrogen peroxide and from 0 to 40 ppm amine impurities.